

Document 59, Bob Creed, Idaho Falls, ID
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		HLW & FD	EIS PROJECT - (AR)PF
		Control # DC-59	
HLW EIS Web Comments			
From:	HLWFDEIS Web Site		
Sent:	Friday, April 14, 2000 11:27 AM		
To:	web@jason.com		
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Subject:	HLW EIS Web Comment		
<p>Name: Bob Creed Affiliation: Address1: 5617 Inverness Ct. Address2: City, State Zip: Idaho Falls, ID 83491 Telephone: 208-524-0240 Date Entered: (ts '2000-04-14 11:26:38') Comment: Comments of the use of "Estimated 100-year peak flows and flow volumes in the Big Lost River and Birch Creek at the Idaho National Engineering Laboratory", U.S. Geological Survey, WRI 96-4163 for flood hazard delineation in the HLW EIS.</p>			
<p>The USGS report cited in the HLWDEIS (Estimated 100-year peak flows and flow volumes in the Big Lost River and Birch Creek at the Idaho National Engineering Laboratory, U.S. Geological Survey, WRI 96-4163) does not represent the 100 year flow at the INEEL. The combined probability of all the assumptions used to obtain this flow frequency estimate results in a frequency of the calculated flow which is much less than 1/100. The DOE should not base programmatically critical decisions on such an extremely conservative flood hazard assessment. The detailed comments below rigorously demonstrate the internal inconsistencies of the report and strongly suggest that it should be revised to address these internal inconsistencies, technical inaccuracies, and lack of mathematical rigor in determining the 100 year flow for the INEEL. Although it could be argued that the report represents "standard procedures" for the determination of a 100 year flow, these procedures clearly do not apply to the Big Lost River below the Mackay dam and the procedures are generally applied in a manner designed to produce the largest possible flow, independent of what the real frequency of that flow may be. The potential impact of such extremely conservative flood hazard assessments could include decreasing resources for the mitigation of real risks. The rational risk based allocation of resources requires that flood hazard assessments be as systematic, thorough, and peer reviewed as possible. The comments below indicate that the USGS report meets none of these requirements.</p>			
Detailed Comments			
<p>Fig. 5- "Most surface-water inflow to Mackay Reservoir is the result of melting snowpacks." Such a record may not be homogeneous and require special treatment (see Bulletin 17B for example). The text should also note that the design discharge of Mackay dam is 3,250 CFS and historical releases from the dam for the floods cited.</p>			
<p>Fig. 7- "Current estimates of flood frequency distributions for ungaged streams in Idaho are based on analyses done in 1977 and do not incorporate more recent peak-flow data or newly developed estimating techniques.", "Because of the amount and nature of additional data, current computed flood frequency values are likely to be substantially different from those used by Kjelson and Moffatt (1981) to develop their equations."- C. Berenbrock.</p>			
<p>What is the effect of new data on the 1981 regional regression estimates? How does the rain on snow effect affect homogeneity? What are the indirect methods used for the Arco 1965 flow? What are the uncertainties? How were they incorporated? How was this outlier used? Why is it legitimate to compare and include the indirect measurement with gage measurements? Where is the documentation to support this important flow value?</p>			
<p>Fig. 8- "The estimates are less reliable where the natural peak flows have been significantly altered because of storage and diversion structures." Exactly what are the bounds on reliability for the reach downstream of the diversion dam? The Interagency Advisory Committee on Water Data Bulletin 17B (1982) states, "The procedures do not cover watersheds where flood flows are appreciably altered by reservoir regulation or where the possibility of unusual events, such as dam failures, must be considered." ; Summary, pg. 2-3. The Mackay dam is classified as a "high hazard" dam by the State of Idaho and clearly regulates Big Lost River flow. Clearly, the log-Pearson III procedure should not be applied to the watershed below the Mackay dam. If the IACWD 17B were to be followed, it also recommends tests and procedures for rain on snow non-homogeneity, zero flow years, and outliers, such as the 1965 Arco data. None of these issues is explicitly addressed in this report with respect to the</p>			



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"recommended" IAWCD procedures.]

Fig. 9- Why is it appropriate to add the Howell Ranch data in downstream of Mackay dam given that the slope and elevation of the Howell Ranch area is significantly different from the rest of the basin? There is a mathematical problem with the statement that- "Flood-frequency analysis resulted in a 100-year peak flow of 4,880 ft³/S at the Howell Ranch gaging station and compared favorably with the highest recorded peak flow of 4,420 ft³/S on May 25, 1967." There is no independent evidence for the frequency of the May 25 flow. It could have been a 5 or 5,000 year flow. Thus, the assertion that the 100 year flow is good because it "compares favorably" is mathematically invalid. At best, it relies on consensus and no real independent evidence. There is an internal consistency problem related to actual and computed flow estimates for Howell Ranch and Arco. The 100 yr flow is 10% higher for Howell Ranch (which is apparently acceptable because of historic and consensus data) and 290% higher for Arco (which is acceptable in the report but inconsistent with historic and consensus data). Gage data indicates that flows above the Mackay dam, below the Mackay dam and at Arco are less than Howell Ranch. What was the release rate assumed for Mackay dam? What was the release rate during the 1967 floods? The assumption that the dam was full is a deterministic worst case assumption that that should be evaluated probabilistically to determine the true 1% (1/100) chance per year flow. If the dam has been full once since 1917, the annual probability is 1/83 and the computed 100 year flow is now a 1/8300 flow with a 8,300 year return period.]

Fig. 10- Why was a regression equation used to calculate what could easily be obtained from field data? Topographic maps indicate that the area of infiltration for the Chilly sinks is much larger than what is computed using the Dawdy equation. What is the standard error for this equation? Infiltration was adjusted according to rock type but the rocks are inaccurately characterized as "carbonaceous". There are few or no carbonaceous rocks in the Big Lost River Valley or adjacent mountains. This type of inaccuracy in basic geohydrology leads to questions regarding the quality of internal review and the validity of the infiltration rate adjustments. Where are the detailed maps supporting assertions regarding rock type?

Fig. 11- If the width ranged from 200 ft to more than 1,000 ft; how can 350 ft be "representative"? In what sense is the term "conservative" used?

Fig. 12- What was Mackay dam releasing during the "full or nearly full" conditions? What does "full or nearly full" mean with respect to quantitative reservoir capacity and dam discharge? What are the combined probabilities for the 6 assumptions (per ANSI 2.8)? What are the bounds on the inputs described as "probably reasonable"? There is inadequate discussion of the simulation inputs to assess their accuracy and impacts on the assumptions. Likewise, none of the flow versus frequency curves are presented for critical evaluation. No evidence is provided showing that the gage stations are responding only to a simultaneous regional rainfall event. A separate event could have occurred in the Antelope watershed providing a peak independent of the Howell Ranch event. This scenario is more consistent with local meteorology. No hydrographs are presented to support the assertions regarding the timing of peak arrivals. No evidence is provided on the timing of these peaks with respect to the Big Lost River peaks. The longest computed travel time was 6 hours from Howell Ranch to Arco. How does this compare with real data? The 1965 flow peak took 7 days to reach Arco from Howell Ranch and was reduced by 28%. This observation, the lack of graphical data, and the many assumptions involved in computing the peaks call into question the assumption that- "peak flows are not significantly attenuated, travel times are relatively fast, and sub-basin peaks occur within a relatively short period of time; thus the assumption that subbasin peaks occurred simultaneously is probably reasonable." What is the probability? Where do the subbasin peaks occur? The combined probability of all these assumptions actually occurring is far less than 1% per year. The assumption that reservoir effects are minimized by taking an estimated 100 year flow from Howell Ranch and applying it to Arco is extremely conservative and inconsistent with the differences of elevation, topography and hydrology of the 2 regions. No evidence is provided that the effects of reservoir regulation are variable and indeterminate. The record seems to indicate that the design discharge of 3,250 CFS has never been exceeded. No attempt was made to systematically evaluate the effects of reservoir storage. This subject is covered in most engineering hydrology textbooks. For example, the record shows that the reservoir contains a daily average of 32,500 acre-feet of water during June (maximum capacity= 38,500 acre-feet). Given the available reservoir data, it is reasonable to expect that this data would be presented and rigorously characterized in the report before it was asserted that reservoir effects were variable and indeterminate. Flows as much as 2,000 CFS smaller than the Howell Ranch peak have been recorded entering Mackay reservoir the same day. If the intent is to remove the effect of Mackay reservoir, why not optimize the data available for the gage just upstream of Mackay Reservoir and input it just downstream of the reservoir? Similar losses downstream of Mackay occur due to infiltration, even after removing the effects of irrigation.]

Fig. 13- The assumption that Box Canyon infiltration is balanced by runoff may be valid but inadequate data is presented to justify this assumption. For example, Bennett (1986) found that 30% infiltration occurred in the Arco to Diversion dam reach and the basin area is only 60 square miles. What is the probability that there would be adequate rainfall (about 6 times the average) to offset infiltration and that it would occur at the same time the peak is in Box Canyon? How would infiltration effect the attenuation model? This (as well as other) assumptions seem to require that the "100 year rainfall?"

occur simultaneously across the entire Big Lost River watershed. This assumption is not consistent with the meteorology of the region and again calls into question the validity of the assertion that the assumptions represent conditions that have a 1% chance per year of occurring. The data that is presented in the report shows a decrease of 12% between Arco and the INEEL diversion dam.

An internal consistency problem presents itself with respect to the 2 hour hydrograph for Box Canyon. If the peak can go at least 50 miles from Howell Ranch to Arco in 6 hours (as asserted in the text); why can't it go the 7.5 miles in Box Canyon in 2 hours? The resulting attenuation of 170 CFS would seem to be legitimate and required given data presented earlier.

68-12
VII, C
(5) [Pg. 15- The channel width discussion here indicates a serious inconsistency. If the Dowdy equation is used here, a channel width of 144 ft. is indicated but a bankfull width of only 38 ft. was measured. The Dowdy equation has a large uncertainty associated with it that must be quantitatively addressed. A more serious inconsistency is the selective application of the bankfull discharge technique cited as "Harenberg, 1980". A similar estimate of "bankfull" flow at the INEEL would lead to typical estimates of 2500 CFS for the 100 year flow. Why wasn't this important data point considered?]

68-13
VII, C
(5) [Pg. 16- "These assumptions would produce the largest possible flow-volume estimates for this method." The largest possible flow is by definition not a 100 year event. Also note that Bulletin 17B is not intended for the determination of flow volumes. The combined probability of a 100 year flow and a 60 day duration and a simultaneous arrival of subbasin peaks at Arco and the Howell Ranch peak arriving at Arco unattenuated and arriving at the INEEL diversion dam unattenuated is clearly much less than 1/100.]

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EIS PROJECT - (AR) PF

Control # DC-60

HLW EIS Web Comments

From: HLWFDEIS Web Site
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Comment:
[Studsvik, Inc. has recently commercialized on a large scale its patented pyrolysis/steam reforming fluid bed technology for the processing of nuclear wastes generated by the nuclear power stations at its processing facility in Erwin, TN. This technology is also directly applicable to the processing of a large quantity of the mixed wastes presently within the DOE including the SBW at INEEL. Under separate cover, Studsvik has submitted comments on the draft EIS that requests that steam reforming, an alternative to incineration, be considered in the final EIS. This technology was not full deployed when the technical evaluations for the EIS were performed, however it is now a fully proven, fully deployed technology that offers significant advantages over present processing methods and those discussed in the draft EIS.]

60-1 111.D.4(u)

- New Information -

Idaho HLW & FD EIS

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DOE/EIS-0287